WHAT IS CLAIMED IS:

1. A device for penetrating tissue and removing a biological sample, comprising:

a biological sampling element to remove the biological sample, the biological sampling element including a passage therethrough; and

a penetrator positioned within the passage, the penetrator being energized in a repetitive manner to assist in penetrating tissue.

2. The device of claim 1 wherein the penetrator is energized continuously to assist in penetrating tissue.

3. The device of claim 1 wherein the penetrator is energized for discrete periods of time.

4. The device of claim 1 wherein the penetrator is energized in a manner to cause motion of the penetrator.

5. The device of claim 1 wherein the penetrator is energized to cause heating of the penetrator.

6. The device of claim 4 wherein the motion of the penetrator includes at least one of rotational motion or axial motion.

7. The device of claim 4 wherein the penetrator includes at least a single effector that is moved.

8. The device of claim 4 wherein the penetrator includes a plurality of effectors, at least one of which is moved.

9. The device of claim 4 wherein the penetrator comprises at least two effectors in close proximity to each other, relative motion between the two effectors assisting

penetration of tissue via interaction with tissue in regions where there is close proximity of tissue to an interface between the two effectors.

10. The device of claim 4 wherein the penetrator includes at least two effectors, including a first effector which is moved and a second effector in proximity to the first effector which is stationary, the first effector and the second effector cooperating to penetrated tissue via interaction with tissue in regions where there is close proximity of tissue to an interface between the first effector and the second effector.

11. The device of claim 4 wherein the penetrator includes at least two effectors, including a first effector which is moved and a second effector in proximity to the first effector which is also moved, the first effector and the second effector cooperating to penetrate tissue via interaction with tissue in regions where there is close proximity of tissue to an interface between the first effector and the second effector.

12. The device of claim 1 wherein the biological sampling element comprises:

a first tubular structure

a vibrational coupler that couples rotational energy into the first tubular structure, such that the vibrational energy cuts tissue at the leading edge of the first tubular structure;

a second tubular structure inside said first tubular structure such that the cut tissue inside the second tubular structure is protected from the effect of the rotational energy of the first tubular structure, the penetrator passing through the second tubular structure.

13. The device of claim 1 wherein the biological sampling element is adapted to remove a tissue sample.

14. The device of claim 13 wherein the biological sampling element is adapted to cut tissue and remove the tissue sample.

15. The device of claim 1 where in biological sampling element is adapted to remove a sample of biological fluid.

16. The device of claim 15 wherein the biological fluid is blood.

17. The device of claim 1 wherein electrical energy is used in energizing the penetrator.

18. A device for penetrating tissue and positioning a catheter, comprising:

a catheter comprising a passage therethrough; and

a penetrator in operative connection with the catheter, the penetrator being energized in a repetitive manner to assist in penetrating tissue.

19. The device of claim 18 wherein the penetrator is removably positioned within the passage of the catheter.

20. The device of claim 18 wherein the penetrator is positioned on the exterior of the catheter.

21. A needle for penetrating tissue comprising:

a first effector comprising a surface; and

at least one actuator in operative connection with the first effector, the actuator adapted to cause motion of the first effector such that tearing of tissue takes place in regions where there is close proximity of tissue to the surface of the first effector.

22. The needle of claim 21 wherein the surface of the first effector is a forward surface thereof.

23. The needle of claim 23 wherein the forward surface of the first effector is rough.

24. The needle of claim 21 wherein the needle penetrates without application of a significant axial force thereto.

25. The needle of claim 21 wherein tissue is torn along a path determined by the characteristics of the tissue.

26. The needle of claim 25 wherein the path is determined at least in part by the resistance to tearing exhibited by tissue forward of the needle.

27. The needle of claim 25 wherein tissue having a relatively higher resistance to tearing is pushed aside by the needle and not torn.

28. The needle of claim 21 further comprising at least a second effector comprising a surface, the surface of the second effector being in close proximity to the surface of the first effector; relative motion between the first effector and the second effectors causing tissue tearing to occur in regions where there is close proximity of tissue to an interface between the first effector and the second effector.

29. A needle for sampling tissue, comprising

a first tubular structure;

a vibrational coupler that couples rotational energy into the first tubular structure, the vibrational energy being suitable to penetrate tissue at the leading edge of the first tubular structure;

a second tubular structure positioned inside the first tubular structure, such that cut tissue passes into the second tubular structure and is protected from the effect of the rotational energy of the first tubular structure.

30. A method of inserting a tissue resident conduit into tissue, comprising the step:

energizing at least a portion of a forward end of the a conduit insertion device to assist in penetrating tissue.

31. The method of claim 30 wherein the tissue resident conduit is a catheter.

32. The method of claim 30 wherein the tissue resident conduit is flexible.

33. The method of claim 30 wherein the tissue resident conduit has a blunt forward surface.

34. A device for inserting a tissue resident conduit comprising:
at least one component that is energized during penetration to assist in penetrating tissue.

35. The device of claim 34 wherein the tissue resident conduit is flexible and the energized component is positioned on a forward end of the tissue resident conduit.

36. The device of claim 35 further comprising a mechanism for directing the penetration of the tissue resident conduit.

37. The device of claim 34 further comprising a rigid penetrator, the energized component being positioned on a forward end of the penetrator, the tissue resident conduit being in operative and removable connection with the penetrator so that the penetrator can be removed from penetrated tissue while the tissue resident conduit remains within the penetrated tissue.

38. The device of claim 37 wherein the penetrator comprises an axial passage therethrough in which the tissue resident conduit is positioned during penetration.

39. The device of claim 37 wherein the penetrator is positioned within the conduit during penetration.

40. The device of claim 37 wherein the tissue resident conduit is positioned adjacent the penetrator during penetration.

41. The device of claim 37 wherein the tissue resident conduit is flexible.

42. The device of claim 34 wherein the tissue resident conduit is a catheter.

43. The device of claim 37 wherein the tissue resident conduit is a catheter.

44. The device of claim 34 wherein the effector is adapted to penetrate through a wall of a blood vessel.

45. A device for penetrating tissue comprising:
a nonlinear penetrator comprising at a forward end thereof at least a first effector, the device further comprising at least one actuator in operative connection with the first effector, the actuator adapted to cause motion of the first effector.

46. The device of claim 45 wherein the penetrator is curved with a curve of a predetermined shape.

47. The device of claim 46 wherein the penetrator is curved in a complex manner.

48. The device of claim 45 wherein the penetrator is flexible.

49. The device of claim 45 further comprising a mechanism to direct the penetration of the penetrator.

50. A device for penetrating tissue comprising:

a penetrator comprising at a forward end thereof at least a first effector and at least one actuator in operative connection with the first effector, the actuator adapted to cause motion of the first effector, the effector being rotatable about the axis of the penetrator

51. A non-coring needle comprising a penetrating member, a forward end of the penetrating member comprising a forward extending section comprising at least two points spaced from each other and being adapted to pierce tissue.

52. The needle of claim 51 further comprising an actuator to energize at least a portion of the needle to facilitate penetration.

53. The needle of claim 51 wherein at least a portion of the forward end of the penetrating member is non-cutting so that coring does not occur upon penetration of the tissue.

54. The needle of claim 51 wherein the at least two point are positioned to stabilize tissue for penetration.

55 A blunt needle comprising at least one effector that does not readily penetrate tissue and at least one actuator that when energized enables the needle to readily penetrate tissue.

56 A needle of claim 55 containing a conduit such that fluid can be delivered to the tissue or material removed from the tissue.